



Journal homepage:
<http://www.bsu.edu.eg/bsujournals/JVMR.aspx>
Online ISSN: 2357-0520 Print ISSN: 2357-0512



Case Report

A case report of anatomical variation in the left kidney of a Pit Bull dog in Trinidad

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ABSTRACT

The current study showed that the right and left kidneys of a Pit Bull dog were normal, the only difference, which appeared in the left kidney, is the bulging of the mid-lateral border with a marked depression in the cranio-lateral aspect of the left kidney.

ARTICLE INFO

Article history:

Received

11/9/2019

Accepted

10/12/2019

Online 1/2/2020

Keywords:

Anatomical variation, A Pit Bull dog, Left kidney

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1. Introduction

The kidney is a vital organ in mammals. The canine kidneys are a pair of retroperitoneal, bean-shaped organs. The right kidney is situated more cranial than the left one and is classified as smooth unipapillary type (Budras et al., 2007). There were abnormalities which were observed in kidneys such as agenesis in horse, cattle, pig, sheep, goat, dog and cat, hypoplasia of renal cortex in dog, persistence of fetal lobulation in pig, horse-shoe kidney in horse, cattle, cat and pig and duplication in pig and cattle (Comer, 1968). Anatomical variations of a lobulated kidney (Choudhary et al., 2017) and horseshoe kidney (Mote et al., 2017) were also recorded in humans.

2. Material and methods

An adult male Pit Bull dog was obtained after euthanasia from the local humane society to demonstrate the topographic position and arterial supply of the kidneys for year II veterinary students at the Anatomy Department, School of Veterinary students, The University of the West Indies, Trinidad, and Tobago. A longitudinal incision was made in the midventral line of the abdominal wall starting from xiphoid cartilage of the sternum till the anus. Careful gross dissection of the kidneys was performed. The topographic position of the kidneys in relation to the other related structures were observed. The kidneys were removed from the abdominal cavity then gross anatomy measurements such as the weight, length, width, and circumference were recorded. Gross

photographs were taken using a digital camera. Tissue samples were taken from the right and left kidneys, fixed in 10% neutral buffered formalin for 24-48 hours, dehydrated in ascending grades of ethanol, cleared in xylene and embedded in paraffin blocks. Sections of 5 μ m thickness were prepared using a microtome and stained by hematoxylin and eosin for histological examination.

3. Results

The right kidney of the adult male Pit Bull dog was normal as it was thick, smooth relatively short bean shaped, while the left kidney showed abnormal bulging in its lateral border with a marked depression in its craniolateral aspect (Fig. 1). There was no anatomical variation in the position of the two kidneys. The longitudinal section showed a marked pale coloration of the cortex and medulla of the left kidney than that of the right one. There were marked differences in the weight and circumference and slight differences in the length and width in favor of the right kidney (Fig. 2). Histological examination showed no abnormalities in both kidneys and they had the normal structures of the dog kidneys which are large amounts of renal corpuscles, convoluted tubules and collecting ducts (Fig. 3).

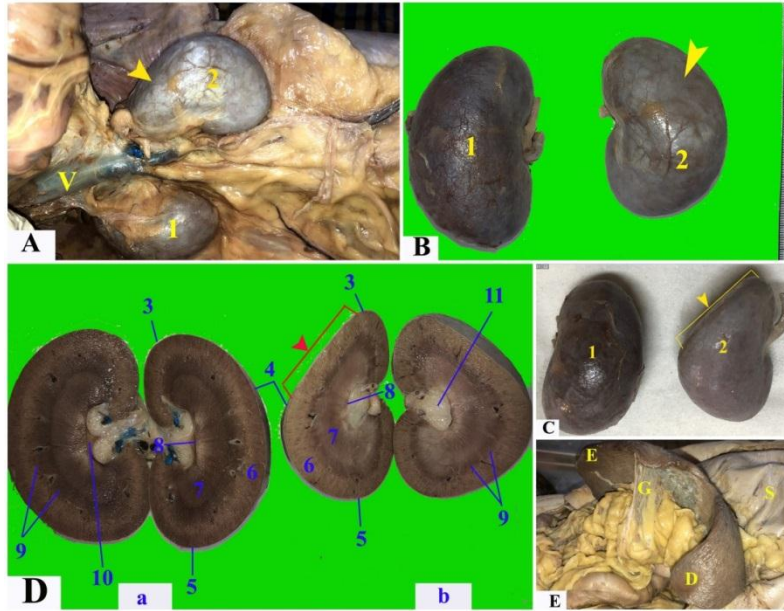


Fig.1 Photographs showing the position of the right and left kidneys in situ (A). Right and left kidneys after removal from the abdominal cavity (B&C). Longitudinal sections of the right (a) and left (b) kidneys (D) and position and parts of the spleen (E). 1- Right kidney; 2-Left kidney; 3-Cranial pole of the kidney; 4-Lateral border of the kidney; 5- Caudal pole of the kidney; 6-Renal cortex; 7-Renal medulla; 8-Renal crest; 9-Base of renal pyramids; 10-Renal pelvis; 11-Adipose tissue in renal sinus; D- Dorsal extremity of spleen; E-Ventral extremity of the spleen; G-Gastrosplenic ligament; S-Stomach; V- Caudal vena cava; Arrowhead- A depression in the cranio-lateral aspect of the left kidney.

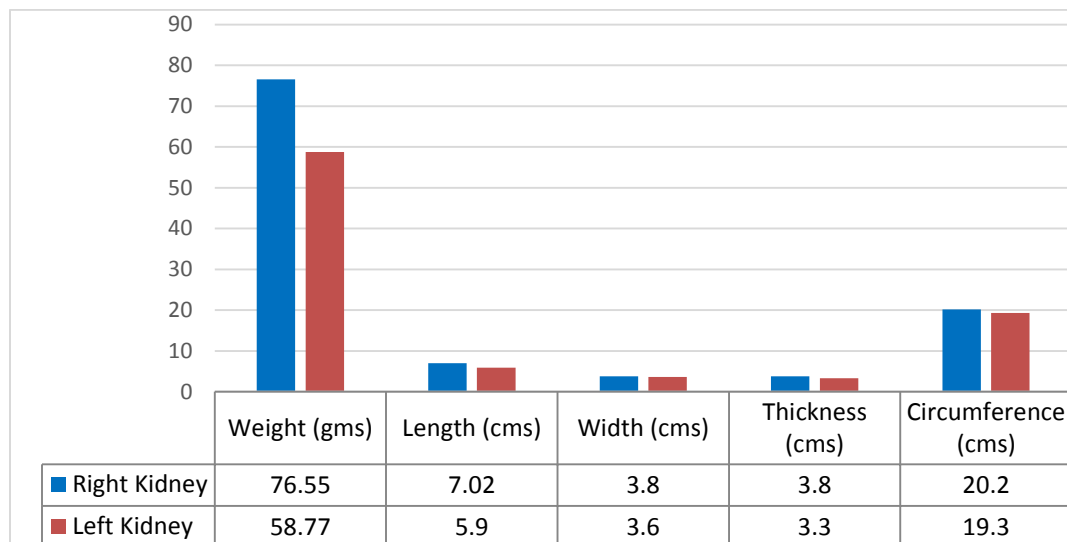


Fig.2 A graph showing the comparison measurements of the right and left kidneys of the dog.

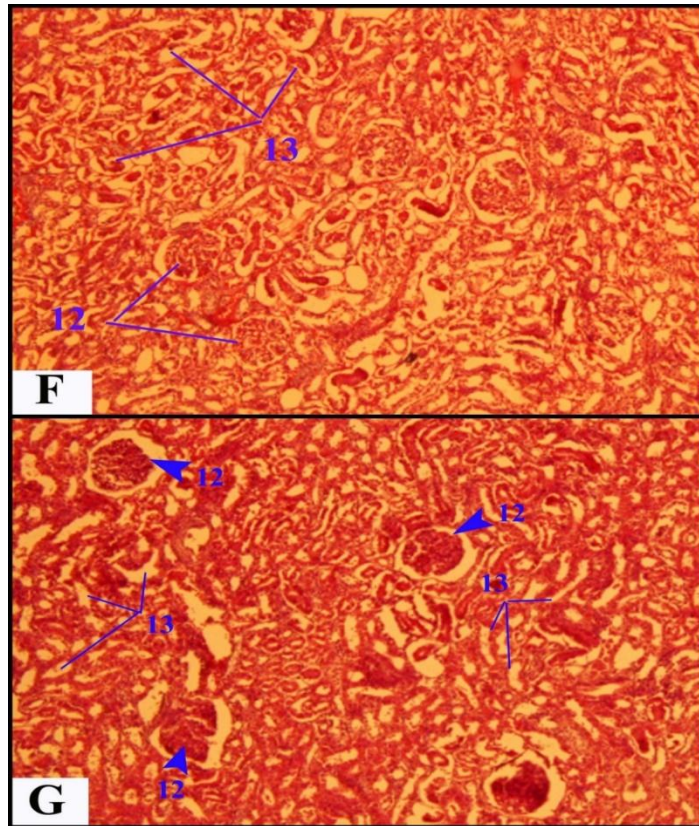


Fig.3 Photomicrographs showing the renal corpuscles (12) and tubules (13) of the right (F) and left kidneys (G). H&E x20.

4. Discussion

There was very little literature available concerning the anatomical variation in the kidney of domestic animals. In this regard, this case report will provide a unique occurrence in the kidney of the dog, especially in this breed.

This report recorded that the left kidney of the male Pit Bull dog showed abnormal bulging in its mid-lateral border with a marked depression in its cranio-lateral aspect. It was also observed that the dorsal extremity of the spleen was in

5. Conclusion

Marked anatomical variation in the left kidney of the dog and position of the spleen of extreme clinical importance for veterinary surgeons and radiologists to avoid being mistaken for cyst and tumor.

close proximity to the lateral border of the left kidney; a similar result was recorded in the human left kidney (Frimann-Dahl, 1961).

The current study showed that the left and right kidneys were normal and consists of large amounts of renal corpuscles as well as convoluted tubules and collecting ducts; a similar result was mentioned in dog (Baragoth et al., 2014).

6. Acknowledgments

The author acknowledges Year II veterinary students for their assistance.

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